TDC

Theater Deployable Communications

Baseline Requirements Document

Promina Multiplexer 800 Expansion Module

(v1)

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ESC/NI4T
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Hanscom AFB, MA 01731

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1.0 SCOPE

This requirements document establishes the performance, manufacture and test requirements for the TDC ICAP P-Mux 800 Expansion Module v1.

2.0 APPLICABLE DOCUMENTS

To the extent specified herein, the following documents of latest current issue on the date of this Baseline Requirements Document form part of this BRD and are used as reference only.

Table 1 - Standards and Applicable Documents

Document Number	Title
MIL-STD-810F	Environmental Test Methods
IEEE 802.3	Ethernet Standard
ANSI/EIA/TIA-530-A-1992	High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Terminating and Data Circuit-Terminating Equipment. (Mar 87) (related to RS-422-A and RS-423-A)
ANSI/EIA/TIA-232-E-1991	Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange (Rates to 20kbps)
CD DOCS Release 2.x75	N.E.T.Promina 800 Series Release 2.x75 Documentation
	TDC ICAP Standards Document

3.0 REQUIREMENTS

3.1 Module Definitions

The Promina 800 Expansion Module node has one expansion shelf (EXS). The P-MUX 800 Expansion Module provides multiplexing and demultiplexing of voice, data and message traffic. This multiplexing function creates bandwidth efficient connectivity between the deployed base and off-base locations. The P-MUX 800 Expansion Module is generally located at the primary hub of the deployed base. Figure 1 shows the PMUX 800 Expansion Module connections for interfacing voice and data traffic from local equipment to off-base locations as seen in the Context Diagram Figure 2 utilized with the P-MUX 800 Base Module.

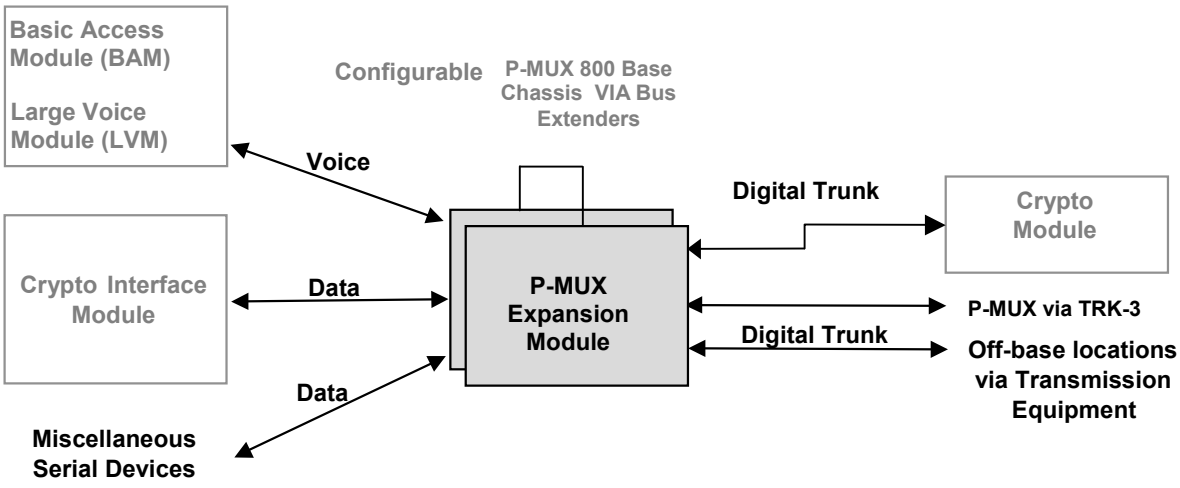


Figure 1 - P-Mux 800 Expansion Module Appication

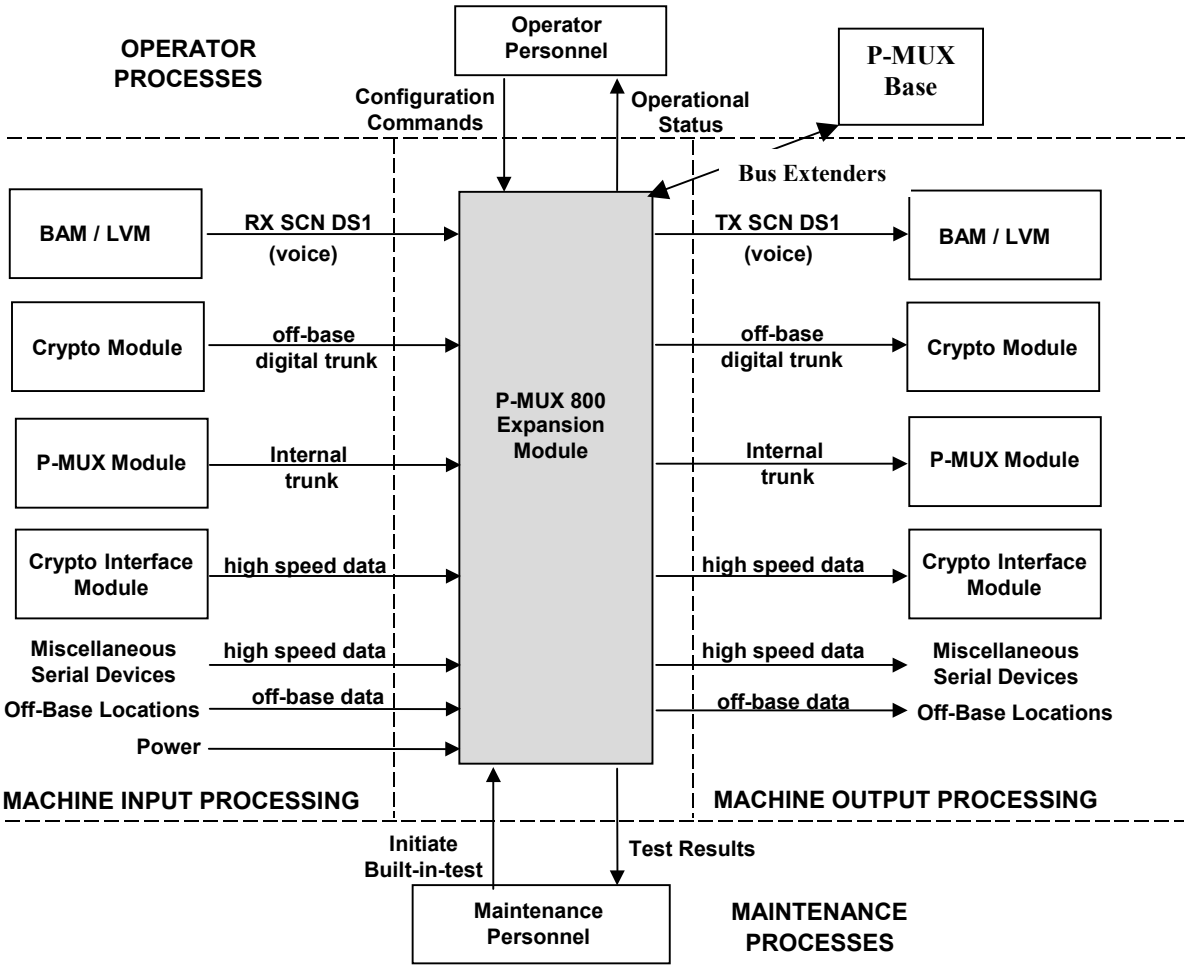


Figure 2 - P-Mux 800 Expansion Module Context Diagram

3.2 Performance Requirements

3.2.1 Electrical Interface Requirements (External)

The P-MUX 800 Expansion Module includes the number and type of active external interfaces presented in Table 2.

Table 2 - P-Mux 800 Expansion Module External Interface Characteristics

Signal Name	Quantity	I/O	Connector	Primary Interface	Electrical Characteristics
Prime Power	1	I	IEC 320 C-20 Receptacle	AC Power	100 - 1300 VAC, 200-240 VAC, 50 - 60 Hz

Table 2 - P-Mux 800 Expansion Module External Interface Characteristics

Signal Name	Quantity	I/O	Connector	Primary Interface	Electrical Characteristics
Bus Exchange	2	I/O	DB-15F	PMUX 800 Base shelve (SXI-2)	NET Proprietary
Voice Backbone Connectors (RX SCN DS-1)	2	I	ST	BAM or LVM	Proprietary multi-mode fiber optic signal
Voice Backbone Connectors (TX SCN DS-1)	2	O	ST	BAM or LVM	Proprietary multi-mode fiber optic signal
EIA-530/DCE Serial Connector	6	I/O	DB-25F	CIM	EIA-530/DCE
Promina Conditioned Diphase (CDI) Connector	2Tx & 24Rx, 2	I/O	BJ-76 Twin ax DB-25F	Baseband and CDI Devices	Unbalanced Conditioned Diphase, EIA-530/Balanced CDI
Promina SA-TRK (DTE) Connector	2	I/O	DB-25F	Transmission Systems	EIA-530/DTE or Unbalanced CDI

3.2.1.1 Prime Power

In accordance with the TDC Standards document, the P-MUX 800 Expansion Module operates from 100 - 130 VAC, 200 - 240 VAC, 50 - 60 Hz, single phase, and three-wire power. The P-MUX 800 Base Module includes:

- An IEC–320 C-20 male connector (or equivalent) for prime power.
- An internal line transient suppressor to minimize line variations.

3.2.1.2 Bus Exchange Connectors

Two DB-15 female connectors are provided on two BX-2 cards to accommodate communication between the expansion shelves and the high spped shelf Slot 14 BX-2 card is Domain 0 and Slot 15 BX-2 card is Combain B. The pin outs are proprietary to Network Equipment Technology (NET).

3.2.1.3 Voice Backbone Connectors

The four Voice Backbone connectors are fiber optic ST type connectors with the DS-1 signal modulated onto multimode fiber optic carriers. The fiber optic signal format is created by a fiber optic transceiver, which interfaces with the four DS-1 ports on the Promina PRC cards.

3.2.1.4 EIA-530/DCE Serial Connectors

The EIA-530 Serial connectors are female DB-25 type connectors in accordance with the EIA-530/DCE standard. This connector provides the interface to the Promina HSD-2B and USD rear cards. Pin assignments are shown in Table 3.

Table 3 - EIA-530 Serial Connector

Pin	Signal	I/O	Pin	Signal	I/O	Pin	Signal	I/O
1	Frame Ground	–	10	Receive Line Signal Detect (B)	O	19	Request to Send (B)	I
2	TX Data (A)	I	11	Terminal Timing(B)	I	20	Data Terminal Ready (A)	I
3	RX Data (A)	O	12	TX Timing (B)	O	21	NC	–
4	Request to Send (A)	I	13	Clear to Send (B)	O	22	Data Set Ready (B)	O
5	Clear to Send (A)	O	14	TX Data (B)	I	23	Data Terminal Ready (B)	I
6	Data Set Ready (A)	O	15	TX Timing (A)	O	24	Terminal Timing (A)	I
7	Signal Ground	–	16	RX Data (B)	O	25	NC	–
8	Receive Line Signal Detect (A)	O	17	RX Timing (A)	O			
9	RX Timing (B)	O	18	NC	–			

3.2.1.5 Promina Conditioned Diphase (CDI) Connector

The Promina CDI interface card (CDP) provides a four-wire balanced CDI interface through each female DB-25 connector and a two-wire unbalanced CDI interface through each BJ-76 Twinax connector. Pin assignments for the female DB-25 connector on the CDP interface for the HSD-2B and USD port are shown in Table 4.

Table 4 - Promina CDI Connector on USD Card

Pin	Signal	I/O	Pin	Signal	I/O	Pin	Signal	I/O
1	Shield	–	10	Not Used	–	19	Not Used	–
2	Send Data	O	11	Not Used	–	20	Not Used	–
3	RX Data	I	12	Not Used	–	21	Not Used	–
4	Not Used	-	13	Not Used	–	22	Not Used	–
5	Not Used	-	14	Send Data	O	23	Not Used	–
6	Not Used	-	15	Not Used	–	24	Not Used	–
7	Signal Ground	–	16	RX Data	I	25	NC	–
8	Not Used	-	17	Not Used	–			
9	Not Used	-	18	Not Used	–			

3.2.1.6 Promina SA-TRK (DTE) Connector

The Promina SA-TRK Connectors are female DB-25 type connectors in accordance with the EIA-530/DTE standard. This connector provides the interface to the Promina SA-TRK (DTE). Pin assignments are shown in Table 5.

The EIA-530 interface on the SA-TRK is capable of performing conditioned diphase (CDI) encoding/ decoding on the clock (TT/ RT) and data (SD/ RD) signals. This function is *Enabled* via the software user interface. The default value is *Disabled.*

Table 5 - Promina SA-TRK (DTE) Connector

Pin	Signal	I/O	Pin	Signal	I/O	Pin	Signal	I/O
1	Shield	–	10	Data Carrier Detect (B)	I	19	Crypto Synch (A)	O
2	TX Data (A)	O	11	Terminal Timing (B)	O	20	Data Terminal Ready (A)	O
3	RX Data (A)	I	12	Send Timing (B)	I	21	Good Clock	O
4	Crypto Synch (B)	O	13	Auxiliary Alarm (B)	I	22	1.544 MHz Clock (B)	O
5	Auxiliary Alarm (A)	I	14	Send Data (B)	O	23	Data Terminal Ready (B)	O
6	1.544 MHz Clock (A)	O	15	Send Timing (A)	I	24	Terminal Timing (A)	O
7	Signal Ground	–	16	RX Data (B)	I	25	NC	–
8	Data Carrier Detect (A)	I	17	RX Timing (A)	I			
9	RX Timing (B)	I	18	NC	–			

3.2.2 Electrical Interface Requirements (Internal)

The P-MUX 800 Expansion Module utilizes several types of internal interfaces. See drawings provided in Paragraph 6.3 for details.

3.2.3 Functional Requirements

Figure 3 provides a block diagram of the P-MUX 800 Expansion Module functional architecture. At the heart of the module is a digital multiplexer. The multiplexer accepts voice and data traffic and multiplexes it for transmission to off-base locations. Conversely, the multiplexer demultiplexes off-base traffic onto digital voice and data lines. Additionally the P-MUX 800 Expansion Module provides voice compression.

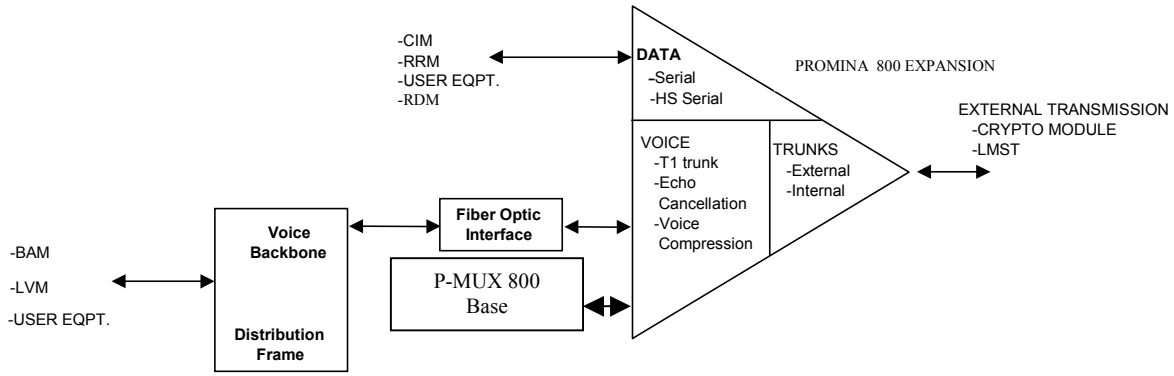


Figure 3 - P-Mux 800 Expansion Module Block Diagram

3.2.3.1 Module Equipment Details

The following subsections provide details of the functionality of the major equipment of the P-MUX 800 Expansion Module.

3.2.3.1.1 Multiplexer

The P-MUX 800 Expansion Module includes one (1) Promina 800-16 slot Expansion Shelve with a set of common equipment cards to expand the capacity of the P-MUX 800 Base Module. The EXS shelf in the P-MUX 800 Base Module is needed to operate the P-MUX 800 Expansion Module. Table 6 lists the card type, front or rear orientation, quantity and reference describing each card's capabilities and features. The references come from the N.E.T. Customer Documentation CD DOCS in the section titled "Promina 800/400/200 Documentation".

Table 6 - Multiplexer Card Complement

Card	Position	Quantity	Reference
BX-2/BXI-2	Front/Rear	2 sets	Promina 800 Series -Common Equipment Modules Doc
Prime Voice Secure, G.729, 12 CH.	Front	4	Voice Module Document
Dual EIA 530 DCE HSD	Front/Rear	3 sets	Data Modules Document
HSD CDI Interface	Front/Rear	1 sets	Data Modules Document
SA Trunk EIA 530 / CD	Front/Rear	2 sets	Trunk Modules Document
PRC/DS1	Front/Rear	1 sets	Voice Module Document

At the P-MUX 800 Expansion Module high-speed input interface, switched circuit network (SCN) voice and video enter via the RX SCN DS1 interface. The P-MUX 800 Expansion Module

compresses voice channels, and multiplexes the channels into an aggregate data stream (off-base data). Similarly, at the multiplexer aggregate input interface the data stream (off-base data) is demultiplexed into individual data channels. The P-MUX 800 Expansion Module decompresses digital voice channels, providing echo cancellation, and outputs the voice and video via the TX SCN DS1 interface to the DTEs.

3.2.3.1.1.1 Network Gateway Feature

The P-MUX 800 Expansion Module in conjunction with the P-MUX 800 Base Module acts as a Gateway Node so to gains access to other IDNX/Promina compatible domains.

3.2.3.1.1.2 Timing

The P-MUX 800 Expansion Module receives its timing via the BX2/BXI-2 card in slots 14 and 15 from the SX2/SXI-2 card in the High Speed Shelf in the PMUX-800 Base Module.

3.2.3.1.1.3 Data Interfaces

The multiplexer provides a Data Communication Equipment (DCE) interface to the DTE interface. The EIA-530/DCE port interface for the HSD-2B card is configurable by the operator to support various synchronous data rates between 9.6 kbps and 8.192 Mbps while the USD card is configurable for rates between 1.2 kbps and 1.344 Mbps. The P-MUX 800 Expansion Module interfaces with other P-MUX Modules through the serial trunk interfaces (SA-TRK). The multiplexer's SA-TRK EIA 530 acts as a Data Terminal Equipment (DTE) interface on the aggregate data side. The SA-TRK card interface is configurable by the operator to support various symmetric and asymmetric data rates between 16 Kbps and 16.384 Mbps.

3.2.3.1.1.4 Voice Interfaces

The P-MUX 800 Expansion Module provides Two fiber optic DS1 connections for interface to the ICAP switched circuit network.

Individual channels on a PVEC are available to any PRC voice port. The PVEC module supports 32 channels. The P-MUX 800 Expansion Module provides voice compression on operator selectable channels. Voice compression cannot be single ended (i.e. both sites must be using voice compression). The Prime Voice Secure module supports 12 channels and compresses 64 kbps (μ-Law and A- Law) PCM voice calls into LD-CELP compressed rates as low as 4.8 kbps.

3.2.3.1.2 Built-In Test

The multiplexer includes continuously running diagnostics to detect and report major faults via the configuration and status ports. The multiplexer includes supplementary built-in diagnostics, which may be run off-line, to aid the operator in isolating faults to the LRU level. The multiplexer includes a local loopback function, which may be enabled by the operator.

3.2.3.2 Configuration Options (Kits)

In addition to the basic functions and features the installer may customize the multiplexer by modifying the card complement to provide the additional functions and features. Some of the customize interfaces are listed below:

- P-MUX Voice Kit
- P-MUX Port Interface Kit
- P-MUX Trunk Interface Kit
- P-MUX 800 Voice Kit
- P-MUX 800 Port Interface Kit
- P-MUX 800 Trunk Interface Kit
- Echo Cancellation Kit
- Fireberd Analyzer Kit
- Cable Maintenance Kit
- Fiber Cable Kit
- Circuit Extension Kit

3.2.4 Physical Characteristics

3.2.4.1 Transit Case

The module is housed in an 13U man-transportable container (transit case), approximately 22.5”W. x 27.3”D. x 34.5”H. The transit case is designed to stack on top of, and mechanically interlock to like cases. The frame inside the transit case is designed to slide out of the case to allow removal and replacement of Line-Replaceable-Units in the field. It is designed (with covers in place) to protect the electronic equipment inside from direct exposure to environmental conditions; e.g., rain, snow, ice, dust, etc., likely to be encountered during world wide military transit.

3.2.4.2 Weight

The module, including all internally carried cables does not exceed 188 pound lifting limits.

3.2.4.3 Storage Space

The module transit case includes a storage pouch within its covers to contain cables, manuals, etc. that must be transported and used with the module.

3.2.4.4 Marking

See TDC Standards Document for required markings.

3.2.4.5 Cables and Accessories

The module includes cables listed in Table 7, stored within its covers. Unique cables are marked with the modules Orange and Purple color code as indicated. Strain relief and cable management hardware are provided with the module.

Table 7 - Cables Included with P-Mux 800 Expansion Module

Function	Color Code	Quantity	Description
Power	Orange/Purple	1	IEC–320 receptacle to NEMA 5–15P
Port protectors	Orange/Purple	8	DB25 port protectors
Interface Cable	Orange/Purple	2	Fiber Optic Backbone Cable (stored in pouch)
Interface Cable	Orange/Purple	2	SXI-2 to BXI-2 Cable 25' (P/O Promina)
Interface Cable	Orange/Purple	8	EIA-530 Interface Cable (stored in pouch)
CDI to Cx Cable	Orange/Purple	2	CDI CX11230 hoc to BJ-Twinax Cable (stored in pouch)
Admin Cable	Orange/Purple	2	Module Admin Cable (stored in pouch)

3.2.5 Reliability

The module with its standard complement of LRUs, have a mean time between failure (MTBF) commensurate with similar commercial equipment in its class. The actual MTBF for the major system components are shown in Table 8. Where reliability data is not readily available from the vendor, this is indicated.

Table 8 - MTBF of Major Components

Components	MTBF
Promina 800	6.96 years
Dual T1 Fiber Modem	100,000 hrs

3.2.6 Maintainability

Maintainability characteristics will be part of the selection criteria for all hardware. Ease of maintenance, such as accessibility to Line Replaceable Units, fault detection/isolation software capability, and fault annunciation will be considered.

3.2.6.1 Mean Time Between Preventive Maintenance

The Mean Time Between Preventive Maintenance, during operation, is 30 days. The duration of preventive maintenance actions such as corrosion control, cleaning filters, etc., does not exceed 30 minutes.

3.2.7 Environmental Conditions

During storage, transport and operation the modules can withstand exposure to temperatures as shown in Table 9.

3.2.7.1 Temperature

Temperature characteristics for the major equipment components are shown in Table 9.

Table 9 - Module Temperature Characteristics

Equipment	Temperature (degrees C)	
	Operating	Non-Operating
Promina 800	5 to 25	0 to 70
Dual T1 Fiber Modem	0 to 50	-40 to 85

3.2.7.2 Relative Humidity

Relative humidity characteristics for the major equipment components are shown in Table 10.

Table 10 - Module Humidity Characteristics

Equipment	Humidity
	Non-condensing
Promina 800	20 to 95%
Dual T1 Fiber Modem	0- to 95%

3.2.7.3 Altitude

Altitude characteristics for the major equipment components are shown in Table 11.

Table 11 - Module Altitude Characteristics

Equipment	Altitude (feet)	
	Operating	Non-Operating
Promina 800	10,000	-200 to 40,000
Dual T1 Fiber Modem	15,000	Not Available

3.2.7.4 Sand and Dust

During storage and transport, the modules are protected when exposed to sand and dust in accordance with the best commercial practices for close proximity to operating aircraft. During operation with covers removed, the modules can withstand sand and dust in accordance with the best commercial practices for natural conditions.

3.2.7.5 Shock

Module equipment racks are equipped with rubber shock isolation mounts and is protected from shocks induced during handling, setup and tear down. Modules and components can operate without degradation following exposure to the non-operating shock environment described by Method 516.5 Procedure VI (Bench Handling) of MIL STD 810F.

3.2.7.6 Vibration

The modules are equipped with rubber shock isolation mounts so that the modules can withstand the vibration encountered while being transported by commercial and military airlift, sealift and vehicular (over unimproved roads) systems. MIL-STD-810F, Method 514.5, Procedure I, Categories 4, 7 and 8. applies; alternative procedures may be substituted after approval of the TDC Program Office.

3.3 Design and Construction

3.3.1 Material Parts and Processes

This module is built to good commercial practices. Mechanical and electrical interchangeability exists between like systems, subsystems, assemblies, subassemblies and replaceable parts.

3.3.2 Safety

This module shall not present a safety, fire or health hazard to personnel.

3.3.2.1 Electrical Safety

This module is designed to eliminate the hazard to personnel of inadvertent lethal voltage contact. All electrical conductors carrying voltages in excess of 70 volts shall be insulated to prevent contact or covered by a protective barrier. All removable protective barriers shall be interlocked to automatically disconnect power behind the barrier upon removal or clearly marked with a warning label that indicates the voltage potential that will be encountered behind the barrier. All warning labels shall remain visible after the cover has been removed.

3.3.2.2 Mechanical Safety

Sharp surfaces shall have protective covers or other suitable features to minimize injury where personnel are likely to be exposed to such surfaces.

3.4 Logistics

This module accommodates a two level maintenance concept: organizational (Air Force personnel) and depot (contractor personnel). Removal and replacement of an LRU is defined at the organizational level and any needed repair of the LRU is defined at the depot level. Any special test or support equipment required to effect removal or replacement of an LRU at the

organizational level can be provided as part of the module. No more than two persons shall be required to remove or replace an LRU.

An LRU is defined as the lowest element of the module which can be isolated to be faulty through inspection; built-in test; technical manuals; TDC-ICAP system performance; spares substitution; or other diagnostic aid approved by the Government for organizational level maintenance, exclusive of expendables such as fuses, lamps and LEDs. An LRU is defined at the card/module level or higher.

4.0 QUALITY ASSURANCE PROVISIONS

4.1 General

The quality assurance program includes tests and other evaluations to the extent specified herein. The quality assurance program is designed to verify the electrical, mechanical and functional characteristics of each module. The purpose is to ensure that each module complies with or performs better than the requirements specified herein.

4.2 Responsibility for Inspection

Unless otherwise specified in the contract, the contractor shall be responsible for the performance of all inspection requirements and may use his own or any other facilities suitable for the performance of the inspection requirements. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to the prescribed requirements.

4.3 Product Qualification Test (PQT)

Inspections, analyses, demonstrations and tests verify compliance of Section 3 of this specification on the first production unit.

4.4 Production Acceptance Test (PAT)

Each module delivered to the Government undergoes an Acceptance Test Process as identified in Table 12. The acceptance test verifies that the module interfaces are operating properly prior to delivery to the Government.

4.5 Verification Cross Reference Matrix (VCRM)

Table 12 provides a list of each Section 3 requirement and the verification method to be used. The following paragraphs define the codes employed in the VCRM. Unless otherwise noted, where more than more one verification method is shown, one method or a combination of methods may be used to show compliance.

4.5.1 Not Required (N/R)

This method indicates that verification is not required because the paragraph is a title, heading, general introductory paragraph or statement of a goal and contains no “shall” or “must” statements.

4.5.2 Inspection

Inspection is a method of verification of the module performance or characteristics by examination of the equipment or associated documentation. Inspections are conducted with the use of inspection tools, measurement devices, visual means and comparison. Most inspections apply to verification of requirements associated with physical characteristics such as size, weight,

appearance, adherence to specified standards and engineering practices, quality design, and construction supported with quality documentation. Inspections also include the auditing of manufacturer's data that verifies the performance of non-developmental items that comprise the TDC ICAP module. Inspections may occur during any assembly stage of the unit under test.

4.5.3 Analysis

Analysis is a method of verification through technical evaluation of calculations, computations, models, analytical solutions, use of studies, reduced data, and/or representative data to determine that the item conforms to the specified requirements.

4.5.4 Demonstration

Demonstration is a method of verification whereby the properties, characteristics and parameters of the item are determined by observation alone and without the use of instrumentation for quantitative measurements. This method is used when a requirement does not contain a specific numerical parameter that must be measured. Demonstrations may occur during verification of a unit under test at any assembly stage. Pass/fail criteria are simple yes/no indications of functional performance since no quantitative values are specified.

4.5.5 Test

Test is a method to verify that a specified requirement is met by thoroughly exercising the applicable item under specified conditions and by using the appropriate instrumentation in accordance with test procedures. This method requires the use of laboratory equipment, simulators, or services to verify compliance to the specified requirements. This method is used when it is practicable to make direct or indirect measurement of a specified numerical parameter to verify compliance with a requirement. Tests may occur during verification of a unit at any assembly stage. Actual measured values are recorded, and pass/fail is determined by comparing the measured value with the specified value. Measurement accuracy is precise enough to ensure that the measured value is within the specified tolerance.

Table 12 - Verification Cross Reference Matrix

		Verification Method					
			PQT				
Paragraph	Title	N/R	Inspect	Analysis	Demo	Test	ATP
3.	REQUIREMENTS	X					
3.1	Module Definition	X					
3.2	Performance Requirements	X					
3.2.1	Electrical Interface Requirements (External)	X					
3.2.1.1	Prime Power					X	X
3.2.1.2	Voice Backbone Connectors				X		X
3.2.1.3	EIA-530/DCE Serial Connector				X		X
3.2.1.4	Promina Conditioned Diphase (CDI) Connector				X		X

Table 12 - Verification Cross Reference Matrix

Paragraph	Title	Verification Method					
			PQT				
		N/R	Inspect	Analysis	Demo	Test	ATP
3.2.1.5	Promina SA-TRK (DTE) Connector				X		X
3.2.2	Electrical Interface Requirements (Internal)	X					
3.2.3	Functional Requirements	X					
3.2.3.1	Module Equipment Details	X					
3.2.3.1.1	Multiplexer				X		X
3.2.3.1.1.1	Network Gateway Feature				X		X
3.2.3.1.1.2	Timing				X		X
3.2.3.1.1.3	Data Interfaces				X		X
3.2.3.1.1.4	Voice Interfaces				X		X
3.2.3.1.2	Built-In Test				X		X
3.2.3.2	Configuration Options				X		X
3.2.4	Physical Characteristics	X					
3.2.4.1	Transit Case		X				
3.2.4.2	Weight					X	
3.2.4.3	Storage Space		X				
3.2.4.4	Marking		X				X
3.2.5	Cables and Accessories				X		X
3.2.6	Reliability			X			
3.2.7	Maintainability			X			
3.2.7.1	Mean Time Between Preventive Maintenance			X			
3.2.8	Environmental Conditions	X					
3.2.8.1	Temperature					X	
3.2.8.2	Relative Humidity			X			
3.2.8.3	Altitude			X			
3.2.8.4	Sand and Dust			X			
3.2.8.5	Shock					X	
3.2.8.6	Vibration					X	
3.3	Design and Construction	X					
3.3.1	Materials Parts and Processes			X			
3.3.2	Safety	X					
3.3.2.1	Electrical Safety			X		X	
3.3.2.2	Mechanical Safety		X	X			
3.4	Logistics			X			

5.0 PREPARATION FOR DELIVERY

Each module is packaged for shipment and the package marked in accordance with the requirements of the contract under which the module is ordered.

6.0 BASELINE CONFIGURATION

6.1 Equipment

Table 13 - P-Mux 800 Expansion Module Equipment List

Device	Manufacturer	Part Number	Description	Quantity
Case	ECS Composites	11722	Transit Case, 13U	1
Conditioner	Marway	MPD411130	Power Conditioner	1
Cable W3, W4	TBD	TBD	A3 Power Cord	2
Connector	Fiber Systems Int.	BSTA2000	Bulkhd Coup	4
Protector	Black Box	FA652	Port Protector (stored in pouch)	10
Cable W5	TBD	TBD	PRC - Top Port to T1 Transceiver Channel 0	1
Cable W6	TBD	TBD	PRC – Bottom Port to T1 Transceiver Channel 1	1
Cable (In pouch) P1, P2	TBD	TBD	Fiber Optic Backbone Cable (Stored in pouch)	2
Cable W1, W2	TBD	TBD	Fiber Optic Cable	2
Cable Mgmt	Polyrack	41150-019	Cable MgmtBar	1
Cable Loop	Polytie	41020-SPR	Cable Mgmt Loop	1
Shelf	NET	PER800EUAA	EXS Expansion Shelf, 16 Slot	1
Module (included in EXS Shelf Assembly)	NET	PER800EUAA	BXI-2, Rear Card	2
Module (included in EXS Shelf Assembly)	NET	PER800EUAA	BX-2, Front Card	2
Cable	NET	021260-025	SX, STR-THRU, DB15 M/M Cable Assemble	2
Fan	NET	7063A	Intake Fan Assembly	1
Fan	NET	7052A	Exhaust Fan Assembly	1
Module	NET	3030B	PRC Card	1
Module	NET	4114B	Prime Voice Secure, G.729, 12 CH.	4
Module	NET	5770C	HSD CDI Interface	1
Module	NET	5771A	Dual EIA 530 DCE HSD	3
Module	NET	2230B	SA Trunk EIA 530 / CD	2
Fiber Modem	S. I. TECH	2890-2R-ASP-1	Dual T-1 Fiber Optic Modem	1
Module	NET	9026A	Power Supply Shelf	1
Cable P3 - P10	TBD	TBD	EIA 530 Interface Cable (stored in pouch) 20 ft.	8
Cable P11, P12	NET	KAM-144	8 ft (IDNX-CDI Interface Cable) CX to Trompeter	2

6.2 Elevation Drawings

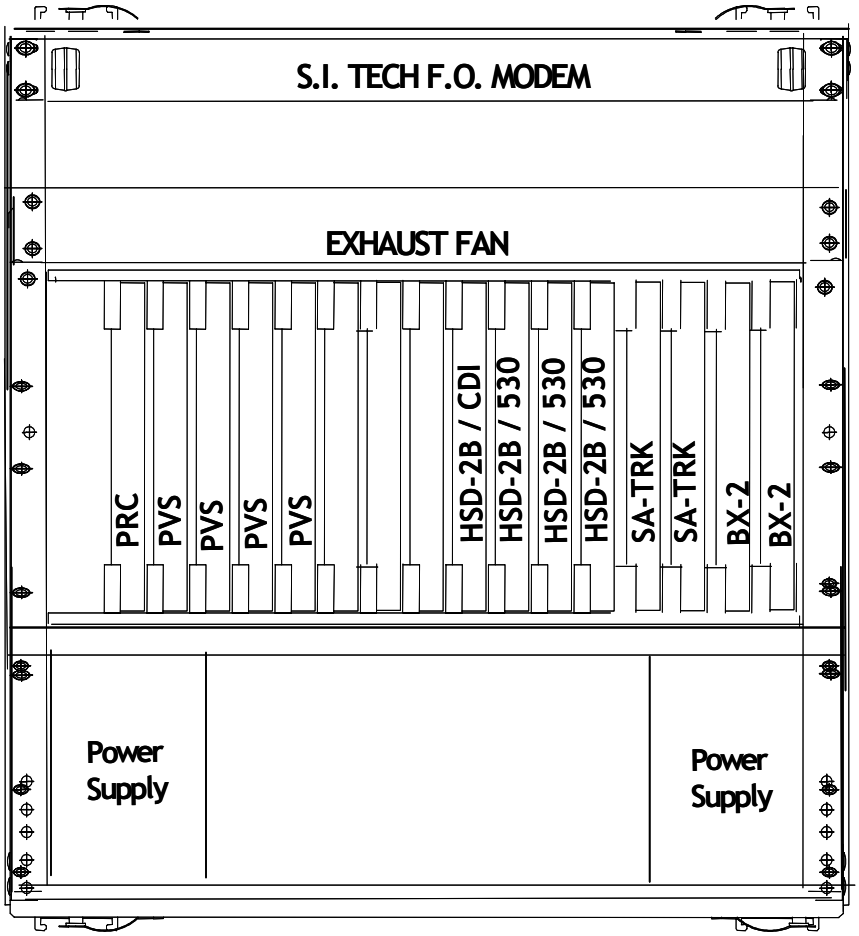


Figure 4 - Front Elevation

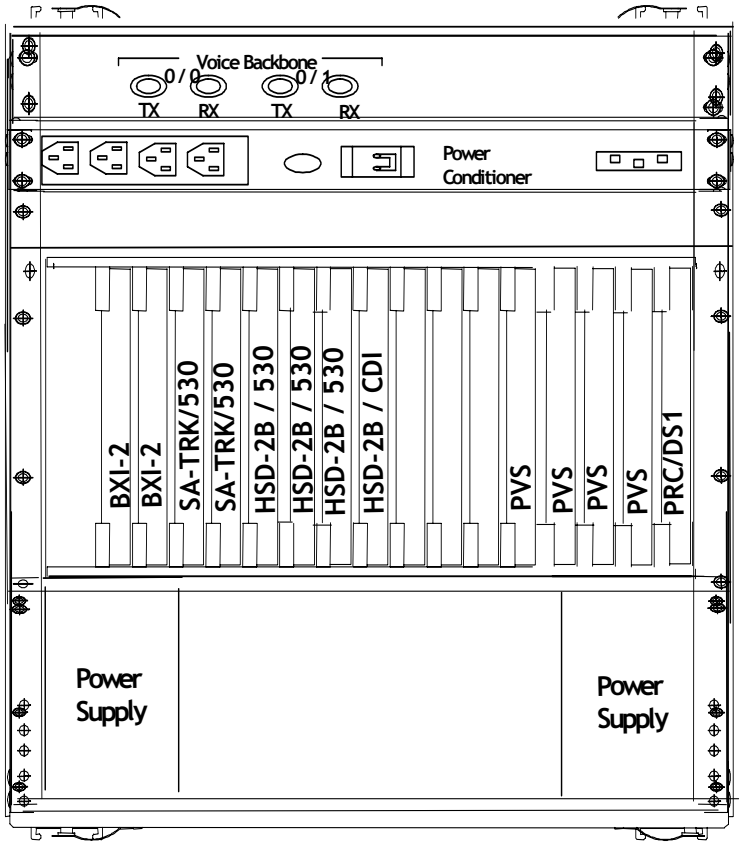


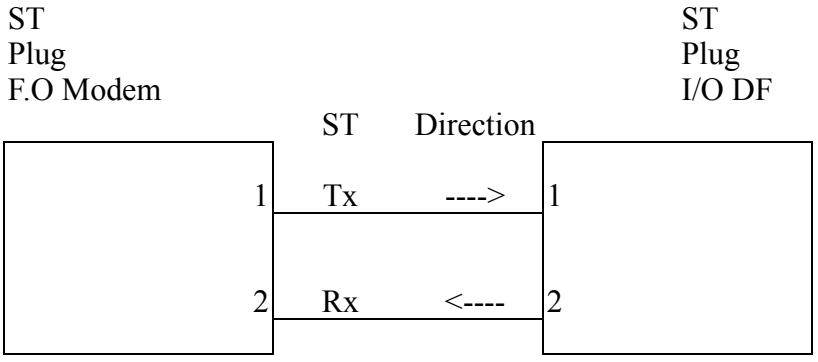
Figure 5 - Rear Elevation

6.3 Cable Diagrams

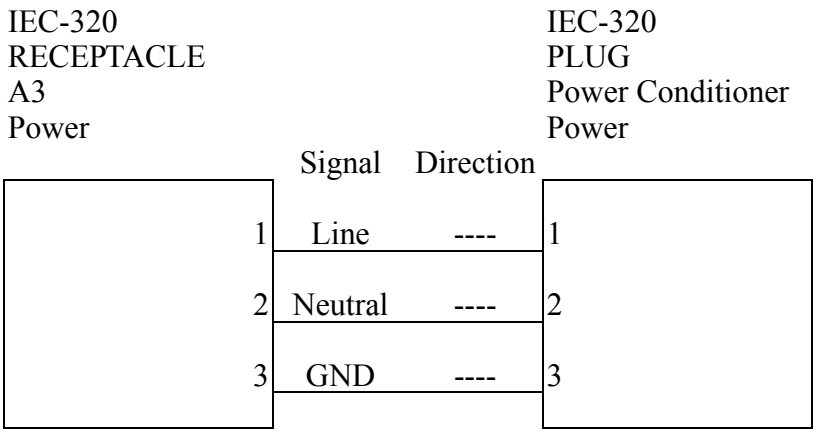
Table 14 - P-Mux 800 Expansion Module Cable Assemblies

Wire Number	Part Number	Manufacturer	Description
W1, W2	TBD	TBD	Fiber Optic Cable
W3, W4	TBD	TBD	A3 Power Cord
W5	TBD	TBD	PRC - Top Port to T1 Transceiver Channel 0
W6	TBD	TBD	PRC – Bottom Port to T1 Transceiver Channel 1
P1, P2	TBD	TBD	Fiber Optic Backbone Cable (stored in pouch)
P3 - P10	TBD	TBD	EIA 530 Interface Cable (stored in pouch)
P11, P12	TBD	TBD	8 ft (IDNX - CDI Interface Cable) CX to Trompeter (stored in pouch)

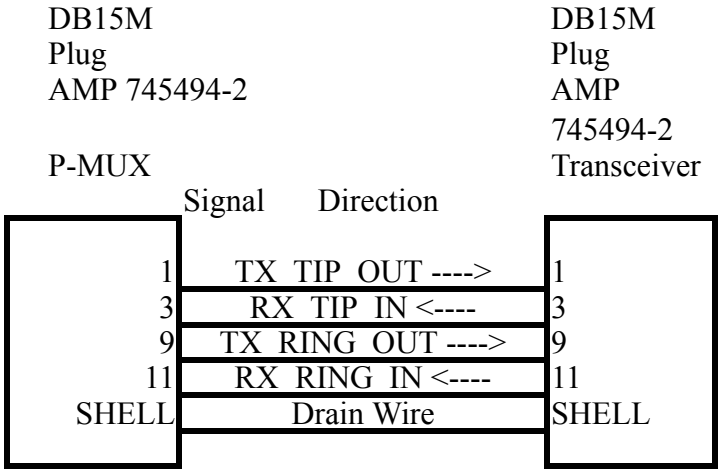
Cable W1, W2
Pin Assignments
Fiber Optic Cable



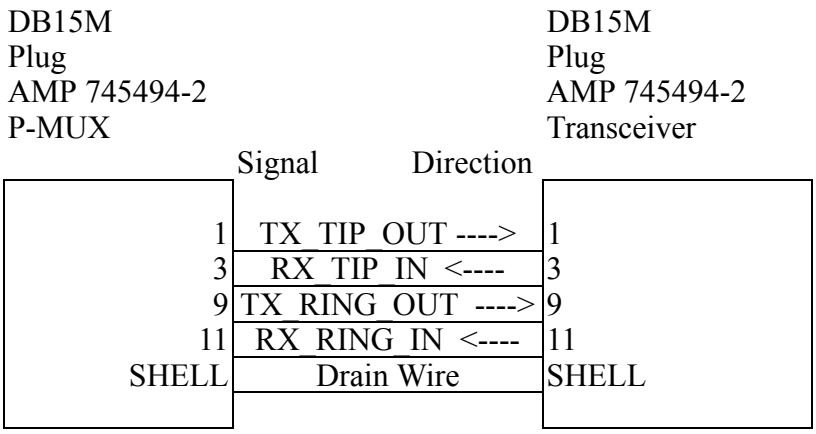
Cable W3, W4
Pin Assignments
A3 Power Cord



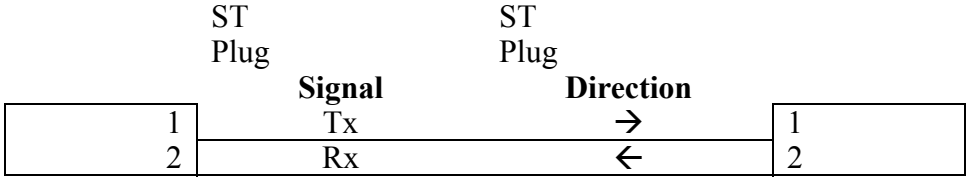
Cable W5
Pin Assignments
PRC - Top Port to T1 Transceiver Channel 0



Cable W6
Pin Assignments
PRC - Bottom Port to T1 Transceiver Channel 1

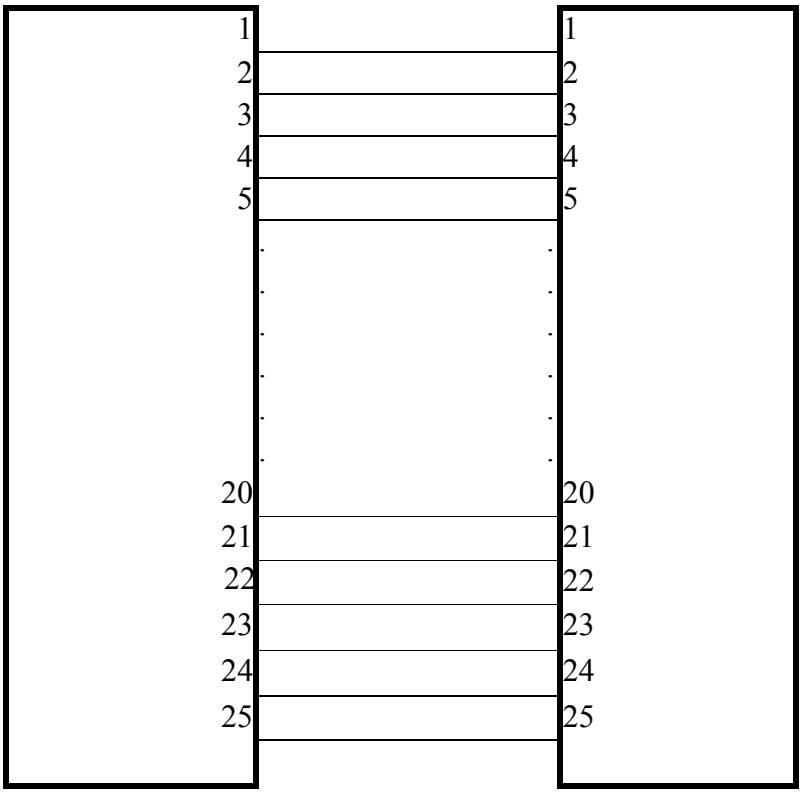


Cable P1, P2
Pin Assignments
Fiber Optic Backbone Cable (stored in pouch)



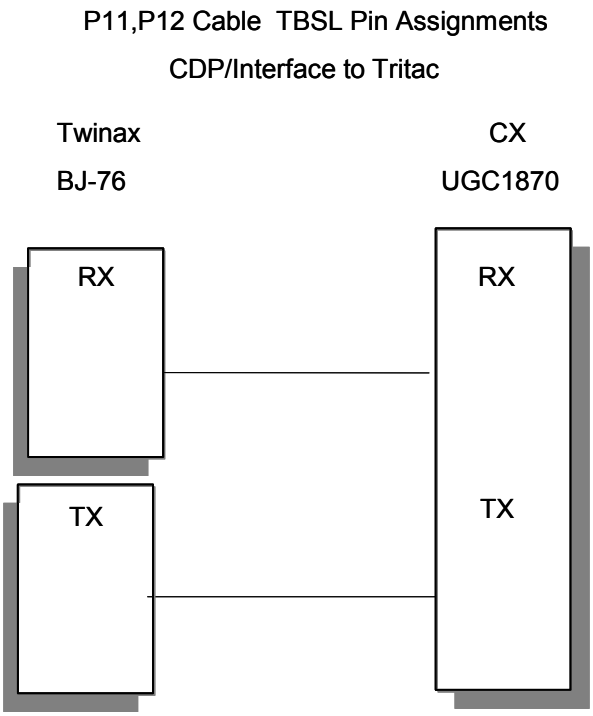
Cable P3 - P10
Pin Assignments
EIA 530 Interface Cable (Stored in pouch)

DB25M Plug AM6368	DB25M Plug AM6368
A PIN	B PIN
1	1
2	2
3	3
4	4
5	5
20	20
21	21
22	22
23	23
24	24
25	25

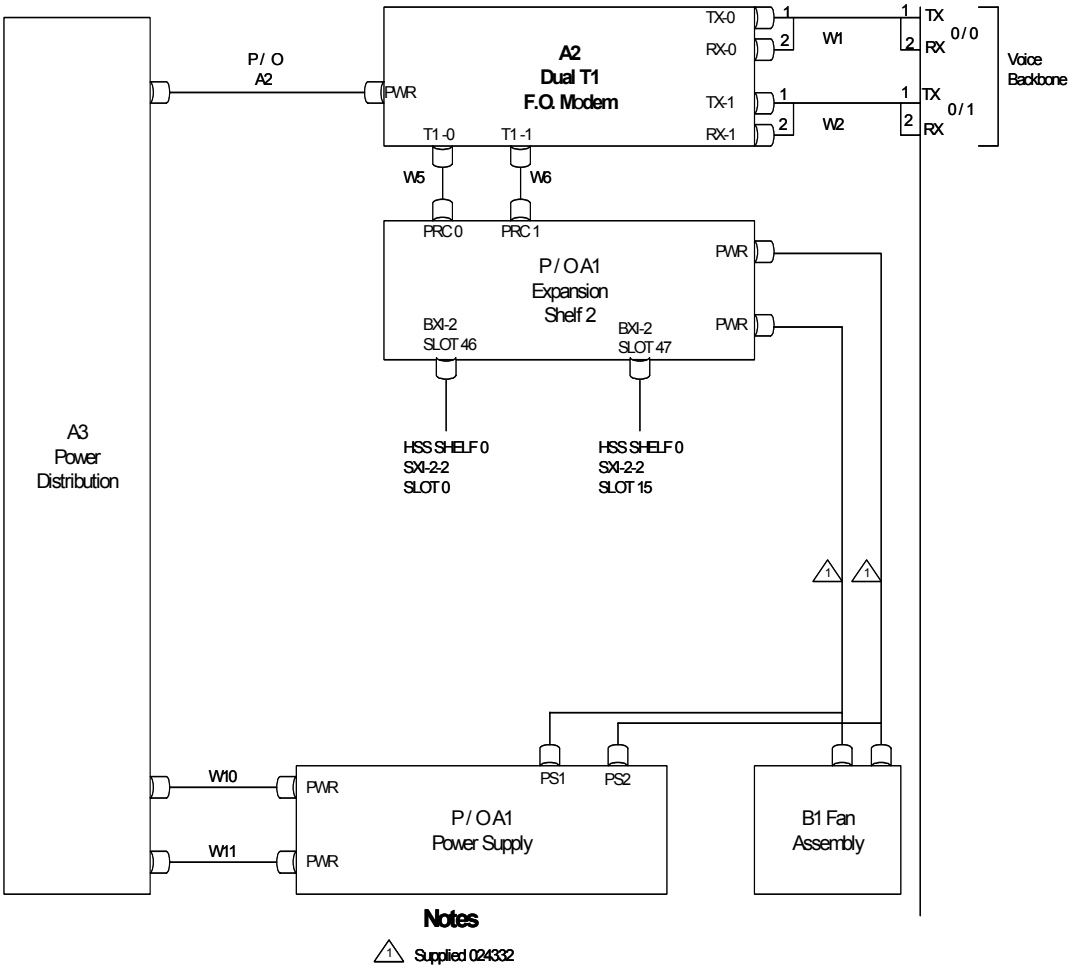


Note: Pinout is 1:1 straight–thru cable 25 pins

Cable P11, P12
Pin Assignments



6.4 Interconnection Diagram


A3
Power
Distribution
P/O
A2
PWR
A2
Dual T1
F.O. Modem
TX-0
RX-0
TX-1
RX-1
1
2
W1
W2
TX
RX
0/0
0/1
Voice
Backbone
T1-0
T1-1
W5
W6
PRC 0
PRC 1
P/O A1
Expansion
Shelf 2
PWR
BXI-2
SLOT 46
BXI-2
SLOT 47
HSS SHELF 0
SXI-2-2
SLOT 0
HSS SHELF 0
SXI-2-2
SLOT 15
W10
W11
PWR
P/O A1
Power Supply
PS1
PS2
B1 Fan
Assembly
Notes
1 Supplied 024332